

REV.
A

SAE AS34541

FEDERAL SUPPLY CLASS
5935

RATIONALE

REVISE TO INCLUDE COMMENTS RECEIVED BY THE GOVERNMENT AND INDUSTRY, UPDATE REFERENCES, ALIGN SPECIFICATION WITH SAE GUIDELINES AND RE-WORK ILLEGIBLE DRAWINGS/TABLES, AND REVIEW SPECIFICATION FOR KNOWN TECHNICAL PROBLEMS.

THE REQUIREMENTS FOR PROCURING THE PRODUCT DESCRIBED HEREIN SHALL CONSIST OF THIS SPECIFICATION SHEET AND THE LATEST ISSUE OF SAE AS50151.

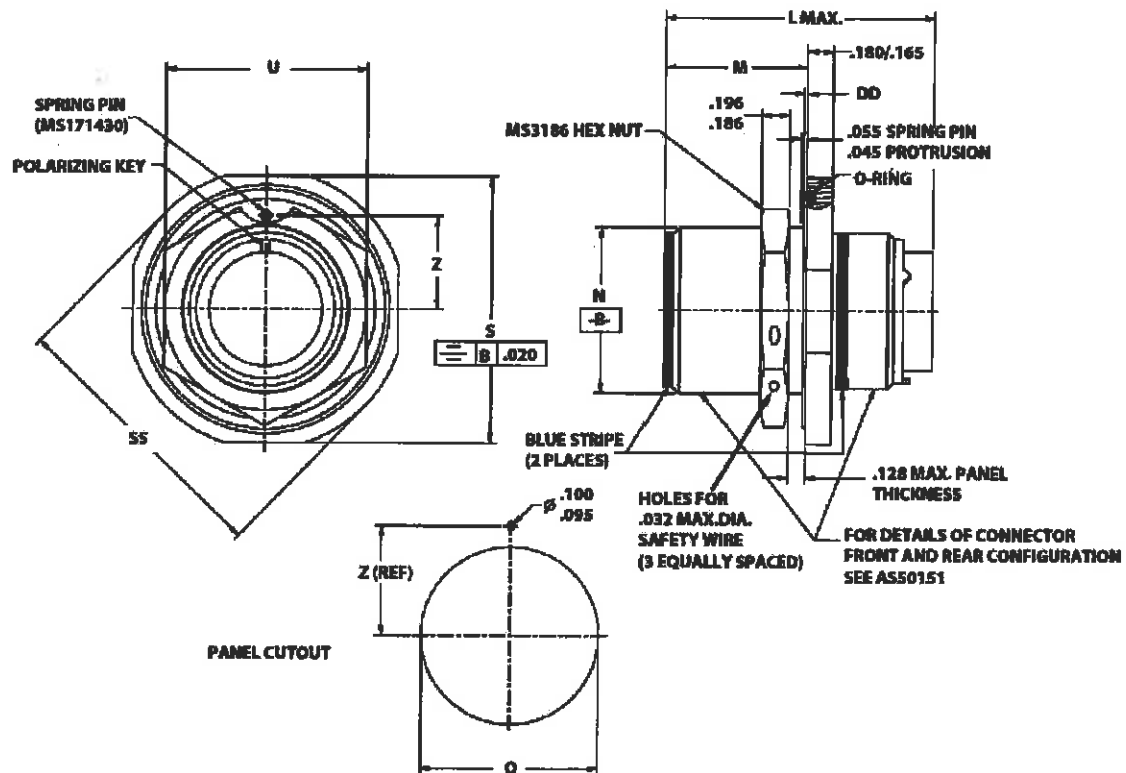
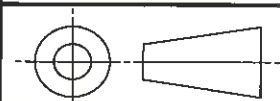


FIGURE 1 - CONNECTOR CONFIGURATION (CLASSES L, U & W ENVIRONMENT RESISTANT)

SAE values your input. To provide feedback
on this Technical Report, please visit
<http://www.sae.org/technical/standards/AS34541A>

THIRD ANGLE PROJECTION



CUSTODIAN: AE-8C1

PROCUREMENT SPECIFICATION: AS50151

SAE Aerospace
An SAE International Group

AEROSPACE STANDARD

(R) CONNECTORS, RECEPTACLE, ELECTRICAL,
JAM NUT MOUNTING, REAR RELEASE
CRIMP CONTACT, AN TYPE

SAE AS34541
SHEET 1 OF 4

REV. A

Copyright 2012 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS

TO PLACE A DOCUMENT ORDER:

Tel: 877-606-7323 (Inside USA and Car
Fax: 724-776-0790

Licensee=NASA Technical Standards 48972545004, User=Hosterman, Kenneth
Not for Resale, 05/30/2012 07:07:06 MDT lce@sae.org

SAE WEB ADDRESS: <http://www.sae.org>

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be reaffirmed, revised, stabilized or cancelled. SAE invites your written comments and suggestions.

ISSUED 1998-01 REAFFIRMED 2003-11 REVISED 2012-01

TABLE 1 - DIMENSIONS

SIZE	L MAX.		M ± .005	N + .000 - .005	S ± .005	SS ± .005	U ± .010
	SIZE 16 & 12 CONTACTS	SIZE 8, 4 & 0 CONTACTS					
8S	2.031	N/A	.720	.500	1.187	1.272	.687
10S				.625	1.312	1.397	.812
10SL				.625	1.312	1.397	.812
12S				.750	1.437	1.522	.937
12	2.125		.970	.750	1.437	1.522	.937
14S	2.031		.720	.870	1.562	1.647	1.125
14	2.125		.970	.870	1.562	1.647	1.125
16S	2.031		.720	1.000	1.687	1.772	1.250
16	2.125	2.500	.970	1.000	1.687	1.772	1.250
18				1.125	1.812	1.897	1.375
20				1.250	1.937	2.022	1.500
22				1.375	2.156	2.241	1.625
24				1.500	2.281	2.366	1.750
28				1.730	2.531	2.616	2.000
32				2.000	2.781	2.866	2.375
36				2.250	3.031	3.116	2.625
40				2.500	3.281	3.366	2.875
44				2.750	3.656	3.741	3.125
48				3.000	3.906	3.991	3.375

	AEROSPACE STANDARD	SAE AS34541 SHEET 2 OF 4	REV. A
	(R) CONNECTORS, RECEPTACLE, ELECTRICAL, JAM NUT MOUNTING, REAR RELEASE CRIMP CONTACT, AN TYPE		

TABLE 1 – DIMENSIONS (CONTINUED)

SIZE	O + .015 - .000	Z ± .005	DD ± .008 O RING PROJECT	O RING SIZE A R.P 568 NO.
8S	.505	.323	.020	-020
10S	.630	.385		-022
10SL	.630	.385		-022
12S	.755	.448		-024
12	.755	.448		-024
14S	.880	.510		-026
14	.880	.510		-026
16S	1.005	.573		-028
16	1.005	.573		-028
18	1.130	.635		-029
20	1.255	.698		-030
22	1.380	.760	.026	-132
24	1.505	.823		-134
28	1.755	.948		-138
32	2.005	1.073		-142
36	2.255	1.198		-148
40	2.505	1.323		-150
44	2.755	1.448		-152
48	3.005	1.573		-153

REQUIREMENTS: ALL REQUIREMENTS SHALL CONSIST OF THIS SPECIFICATION AND THE LATEST ISSUE OF AS50151.

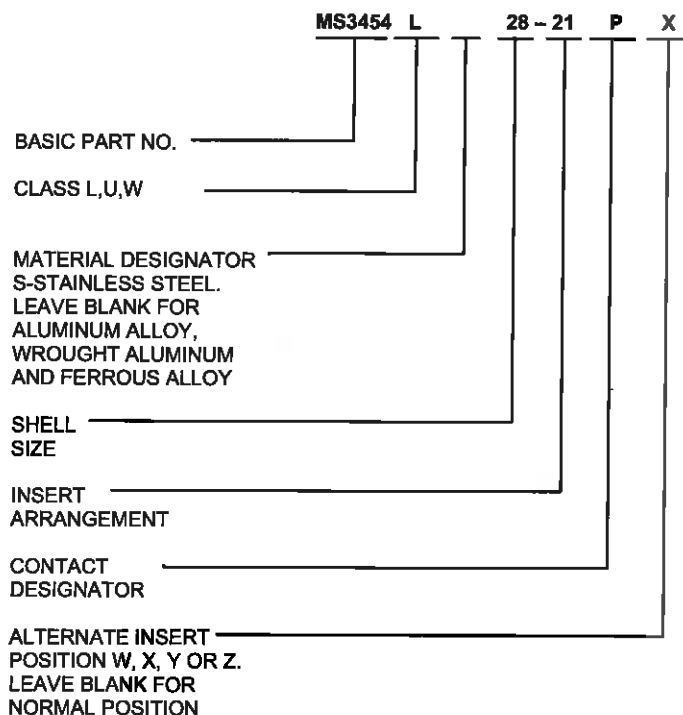
1. DESIGN:

CONNECTORS SHALL BE DESIGNED IN ACCORDANCE WITH FIGURE 1 AND TABLE 1. DIMENSIONS ARE IN INCHES. UNLESS OTHERWISE SPECIFIED, TOLERANCES: DECIMALS ±.016. DIMENSIONS AND TOLERANCING SHALL BE IN ACCORDANCE WITH ANSI/ASME Y14.5M-1994. AS50151 FRONT AND REAR RELEASE CRIMP CONTACT CONNECTORS AND SOLDER CONTACT CONNECTORS ARE INTERMATEABLE. UNLESS OTHERWISE SHOWN, CORRESPONDING FEATURES OF PIN AND SOCKET CONTACT CONNECTORS ARE IDENTICAL.

2. FOR INSERT ARRANGEMENTS SEE MIL-STD-1651.

	AEROSPACE STANDARD	SAE AS34541 SHEET 3 OF 4	REV. A
	(R) CONNECTORS, RECEPTACLE, ELECTRICAL, JAM NUT MOUNTING, REAR RELEASE CRIMP CONTACT, AN TYPE		

3. THE PART NUMBERS SHALL BE AS SHOWN IN THE EXAMPLE BELOW:



NOTES:

NOTICE

THIS DOCUMENT REFERENCES A PART WHICH CONTAINS CADMIUM AS A PLATING MATERIAL. CONSULT LOCAL OFFICIALS IF YOU HAVE QUESTIONS CONCERNING CADMIUM'S USE.

SPECIFICATION NOTES:

A CHANGE BAR (I) LOCATED IN THE LEFT MARGIN IS FOR THE CONVENIENCE OF THE USER IN LOCATING AREAS WHERE TECHNICAL REVISIONS, NOT EDITORIAL CHANGES HAVE BEEN MADE TO THE PREVIOUS ISSUE OF THIS DOCUMENT. AN (R) SYMBOL TO THE LEFT OF THE DOCUMENT TITLE INDICATES A COMPLETE REVISION OF THE DOCUMENT, INCLUDING TECHNICAL REVISIONS. CHANGE BARS AND (R) ARE NOT USED IN ORIGINAL PUBLICATIONS NOR IN DOCUMENTS THAT CONTAIN EDITORIAL CHANGES ONLY.

APPLICATION NOTES:

1. AS34541 CLASS K IS CANCELLED AFTER 5 APRIL 1972. CLASS U IS NOT RECOMMENDED FOR NEW DESIGN AND IS NO LONGER RECOMMENDED FOR USE, EXCEPT FOR REPLACEMENT PURPOSES. CLASS L IS RECOMMENDED FOR NEW DESIGN.
2. AS34541 SUPERSEDES MS3454.

SAE Aerospace <i>An SAE International Group</i>	AEROSPACE STANDARD	SAE AS34541 SHEET 4 OF 4	REV. A
	(R) CONNECTORS, RECEPTACLE, ELECTRICAL, JAM NUT MOUNTING, REAR RELEASE CRIMP CONTACT, AN TYPE		

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be reaffirmed, revised, stabilized or cancelled. SAE invites your written comments and suggestions.

SAE/AS34561

REV.
A

FEDERAL SUPPLY CLASS
5935

RATIONALE

REVISE TO INCLUDE COMMENTS RECEIVED BY THE GOVERNMENT AND INDUSTRY, UPDATE REFERENCES, ALIGN SPECIFICATION WITH SAE GUIDELINES AND RE-WORK ILLEGIBLE DRAWINGS/TABLES, AND REVIEW SPECIFICATION FOR KNOWN TECHNICAL PROBLEMS.

THE REQUIREMENTS FOR PROCURING THE PRODUCT DESCRIBED HEREIN SHALL CONSIST OF THIS SPECIFICATION SHEET AND THE LATEST ISSUE OF SAE AS50151.

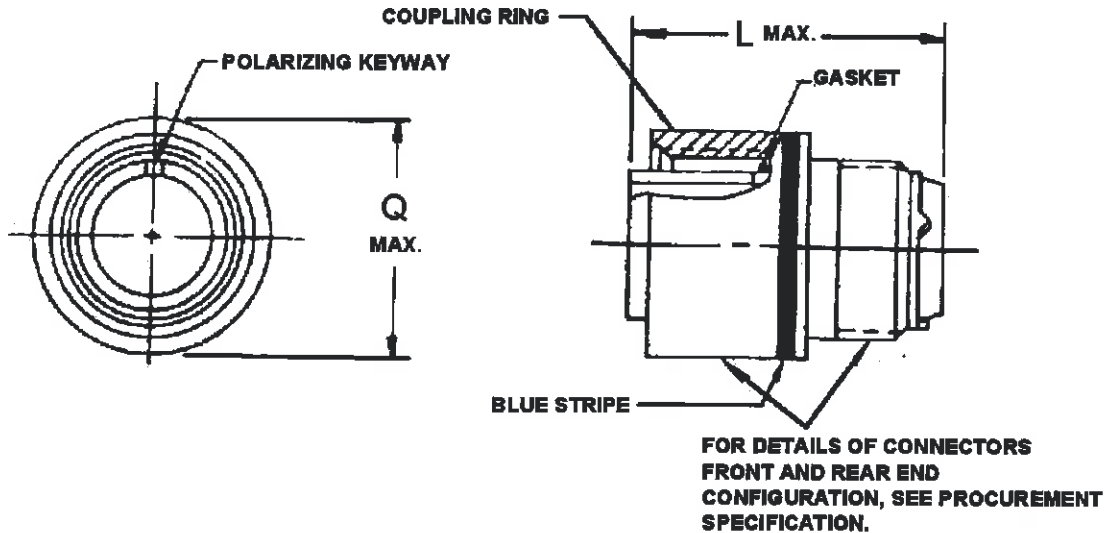
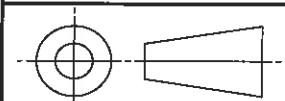


FIGURE 1 – CONNECTOR CONFIGURATION (CLASSES K, L, U & W ENVIRONMENT RESISTANT)

SAE values your input. To provide feedback on this Technical Report, please visit <http://www.sae.org/technical/standards/AS34561A>

THIRD ANGLE PROJECTION



CUSTODIAN: AE-8C1

PROCUREMENT SPECIFICATION: AS50151

SAE Aerospace
An SAE International Group

AEROSPACE STANDARD

(R) CONNECTORS, PLUG, ELECTRICAL,
REAR RELEASE, CRIMP CONTACT,
AN TYPE

SAE AS34561
SHEET 1 OF 3

REV.
A

Copyright 2011 SAE International
All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS

PLACE A DOCUMENT ORDER: Tel: 877-606-7323 (inside USA and Canada)
Fax: 724-776-0790
Licensee=NASA Technical Standards 4/8872545004, User=Hosterman, Kenneth
Not for Resale, 05/24/2012 14:06:42 MDT icg@saes.org

SAE WEB ADDRESS: <http://www.sae.org>

ISSUED 1998-07 REAFFIRMED 2004-11 REVISED 2011-12

TABLE 1 – DIMENSIONS

SIZE	L MAX.		Q MAX.
	SIZE 16 & 12 CONTACTS	SIZE 8, 4 & 0 CONTACTS	
8 S	2.031	N/A	.844
10 S			.969
10 SL			.969
12 S			1.062
12	2.125		1.062
14 S	2.031		1.156
14	2.125		1.156
16 S	2.031		1.250
16	2.125	2.500	1.250
18			1.344
20			1.469
22			1.594
24			1.719
28			1.969
32			2.219
36			2.469
40			2.719
44			2.969
48			3.219

REQUIREMENTS: ALL REQUIREMENTS SHALL CONSIST OF THIS SPECIFICATION AND THE LATEST ISSUE OF AS50151.

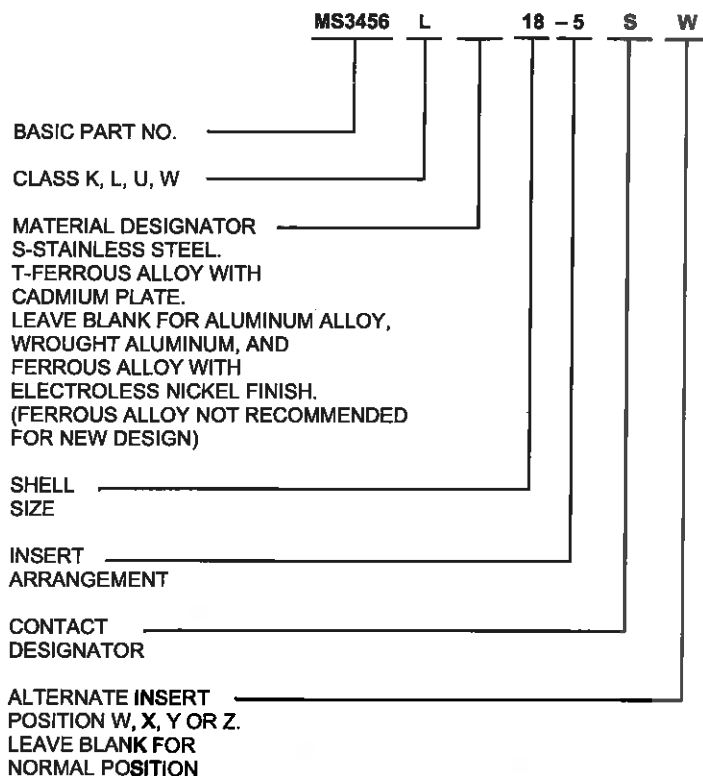
1. DESIGN:

CONNECTORS SHALL BE DESIGNED IN ACCORDANCE WITH FIGURE 1 AND TABLE 1. DIMENSIONS ARE IN INCHES. UNLESS OTHERWISE SPECIFIED, TOLERANCES: DECIMALS ± 0.016 . DIMENSIONS AND TOLERANCING SHALL BE IN ACCORDANCE WITH ANSI/ASME Y14.5M-1994. AS50151 FRONT AND REAR RELEASE CRIMP CONTACT CONNECTORS AND SOLDER CONTACT CONNECTORS ARE INTERMATEABLE. UNLESS OTHERWISE SHOWN, CORRESPONDING FEATURES OF PIN AND SOCKET CONTACT CONNECTORS ARE IDENTICAL. EXTRACTION TOOL MIL-I-81969/29-01 SHALL BE USED TO REMOVE SIZE 16 CONTACTS THAT ARE CRIMPED TO MIL-DTL-25038/1 FIRE ZONE WIRE.

2. FOR INSERT ARRANGEMENTS SEE MIL-STD-1651.

	AEROSPACE STANDARD	SAE AS34561 SHEET 2 OF 3	REV. A
	(R) CONNECTORS, PLUG, ELECTRICAL, REAR RELEASE, CRIMP CONTACT, AN TYPE		

3. THE PART NUMBERS SHALL BE AS SHOWN IN THE EXAMPLE BELOW:



NOTES:

NOTICE

THIS DOCUMENT REFERENCES A PART WHICH CONTAINS CADMIUM AS A PLATING MATERIAL. CONSULT LOCAL OFFICIALS IF YOU HAVE QUESTIONS CONCERNING CADMIUM'S USE.

SPECIFICATION NOTES:

A CHANGE BAR (|) LOCATED IN THE LEFT MARGIN IS FOR THE CONVENIENCE OF THE USER IN LOCATING AREAS WHERE TECHNICAL REVISIONS, NOT EDITORIAL CHANGES HAVE BEEN MADE TO THE PREVIOUS ISSUE OF THIS DOCUMENT. AN (R) SYMBOL TO THE LEFT OF THE DOCUMENT TITLE INDICATES A COMPLETE REVISION OF THE DOCUMENT, INCLUDING TECHNICAL REVISIONS. CHANGE BARS AND (R) ARE NOT USED IN ORIGINAL PUBLICATIONS NOR IN DOCUMENTS THAT CONTAIN EDITORIAL CHANGES ONLY.

APPLICATION NOTES:

1. AS34561 CLASSES K AND U ARE NOT RECOMMENDED FOR NEW DESIGN AND ARE NO LONGER RECOMMENDED FOR USE, EXCEPT FOR REPLACEMENT PURPOSES. CLASSES L AND W ARE RECOMMENDED FOR NEW DESIGN.
2. AS34561 SUPERSEDES MS3456.

SAE Aerospace <i>An SAE International Group</i>	AEROSPACE STANDARD	SAE AS34561 SHEET 3 OF 3	REV. A
	(R) CONNECTORS, PLUG, ELECTRICAL, REAR RELEASE, CRIMP CONTACT, AN TYPE		

SSUED 2001-03 REVISED 2010-12

TABLE 1 - CONTACT DIMENSIONS

BIN CODE	A	B	D DIA	E DIA	F DIA	G DIA	K MIN	M (REF)	N DIA	S	T MAX	U DIA
212	.300 .290	.079 .073	.042 .036	.068 .066	.133 .130	.103 .101	.250	.923	N/A	.631 .619	.015	.0635 .0615
213				.102 .098	.189 .186	.150 .147		1.110	.160 .155			.095 .093
214	.552 .542	.094 .084	.072 .068	.183 .179	.306 .303	.265 .262	.485	1.362	.277 .272	.819 .808		.143 .141
215				.283 .279	.417 .414	.376 .373			.389 .384			.226 .224
216	.678 .660	.124 .084			.455 .451	.615 .611	.564 .561	.580	1.486		N/A	

TABLE 2 - MARKING AND DESIGN CHARACTERISTICS

BIN CODES	COLOR BANDS			MATING END SIZE	WIRE BARREL SIZE	TYPE	CLASS
	1ST	2ND	3RD				
212	RED	BROWN	RED	16	16	A	B
213	RED	BROWN	ORANGE	12	12	A	B
214	RED	BROWN	YELLOW	8	8	A	B
215	RED	BROWN	GREEN	4	4	A	B
216	RED	BROWN	BLUE	0	0	A	B

TABLE 3 - TOOL REQUIREMENTS

BIN CODE	BASIC CRIMPING TOOL	DIE SET	LOCATOR	POSITIONER	INSTALLING TOOL	REMOVAL TOOL
212	M22520/1-01	N/A	N/A	M22520/1-02 BLUE	M81969/14-03	M81969/14-03
	M22520/7-01	N/A	N/A	M22520/7-03		
213	M22750/1-01	N/A	N/A	M22520/1-02 YELLOW	M81969/14-04	M81969/14-04
214	M22520/23-01	M22520/23-02	M22520/23-09	N/A	N/A	M81969/29-02
215	M22520/23-01	M22520/23-04	M22520/23-11	N/A	N/A	M81969/29-03
216	M22520/23-01	M22520/23-05	M22520/23-13	N/A	N/A	M81969/29-04

TABLE 4 - PART NUMBERS

AS39029 PART NUMBER	BIN CODE	SUPERSEDED PART NUMBER(S)
M39029/29-212	212	M39029/29-16-16
M39029/29-213	213	M39029/29-12-12
M39029/29-214	214	M39029/29-8-8
M39029/29-215	215	M39029/29-4-4
M39029/29-216	216	M39029/29-0-0

 An SAE International Group	AEROSPACE STANDARD	SAE AS39029/29 SHEET 2 OF 3	REV. B
	(R) CONTACTS, ELECTRICAL CONNECTOR, PIN, CRIMP REMOVABLE (FOR AS50151 SERIES, AS34501 AND MIL-DTL-83723 SERIES 2 CONNECTORS)		

REQUIREMENTS: ALL REQUIREMENTS SHALL CONSIST OF THIS SPECIFICATION AND THE LATEST ISSUE OF AS39029.

1. DESIGN

CONTACT SHALL BE DESIGNED IN ACCORDANCE WITH FIGURE 1, TABLES 1 AND 2. DIMENSIONS ARE IN INCHES AND SHOWN AFTER PLATING. UNLESS OTHERWISE SPECIFIED, SPHERICAL END DIMENSIONS SHALL CONFORM TO AS39029.

2. TOOLS:

TOOLS REQUIRED FOR CRIMPING CONTACTS TO WIRE/CABLE AND THE INSTALLING/REMOVAL FROM THE CONNECTOR SHALL BE IN ACCORDANCE WITH TABLE 3.

3. PART NUMBERS:

CONTACT PART NUMBERS SHALL BE IN ACCORDANCE WITH TABLE 4. SUPERSEDED PART NUMBERS ARE AS SPECIFIED.

4. MATERIALS:

MATERIALS SHALL BE IN ACCORDANCE WITH AS39029.

5. MECHANICAL:

MECHANICAL PROPERTIES SHALL BE IN ACCORDANCE WITH AS39029.

6. ELECTRICAL:

ELECTRICAL PROPERTIES SHALL BE IN ACCORDANCE WITH AS39029.

7. ENVIRONMENTAL:

ENVIRONMENTAL PROPERTIES SHALL BE IN ACCORDANCE WITH AS39029.

SHOCK TEST SHALL BE PERFORMED AT TEST CONDITION A.

APPLICATION NOTES:

1. CONTACT MATES DIRECTLY INTO AN AS39029/30 SOCKET AS SHOWN IN TABLE 5.

2. BIN CODE 214, 215, AND 216 ARE NOT RECOMMENDED FOR NAVY SHIPBOARD APPLICATION.

TABLE 5 - CONTACT MATING PART NUMBERS

AS39029/29 BIN CODE	MATING AS39029/30 BIN CODE
212	217
212	218
213	219
214	220
215	221
216	222

SPECIFICATION NOTES:

A CHANGE BAR (I) LOCATED IN THE LEFT MARGIN IS FOR THE CONVENIENCE OF THE USER IN LOCATING AREAS WHERE TECHNICAL REVISIONS, NOT EDITORIAL CHANGES HAVE BEEN MADE TO THE PREVIOUS ISSUE OF THIS DOCUMENT. AN (R) SYMBOL TO THE LEFT OF THE DOCUMENT TITLE INDICATES A COMPLETE REVISION OF THE DOCUMENT, INCLUDING TECHNICAL REVISIONS. CHANGE BARS AND (R) ARE NOT USED IN ORIGINAL PUBLICATIONS NOR IN DOCUMENTS THAT CONTAIN EDITORIAL CHANGES ONLY.

 An SAE International Group	AEROSPACE STANDARD	SAE AS39029/29 SHEET 3 OF 3	REV. B
	(R) CONTACTS, ELECTRICAL CONNECTOR, PIN, CRIMP REMOVABLE (FOR AS50151 SERIES, AS34501 AND MIL-DTL-83723 SERIES 2 CONNECTORS)		

REV.
B

SAE AS39029/30

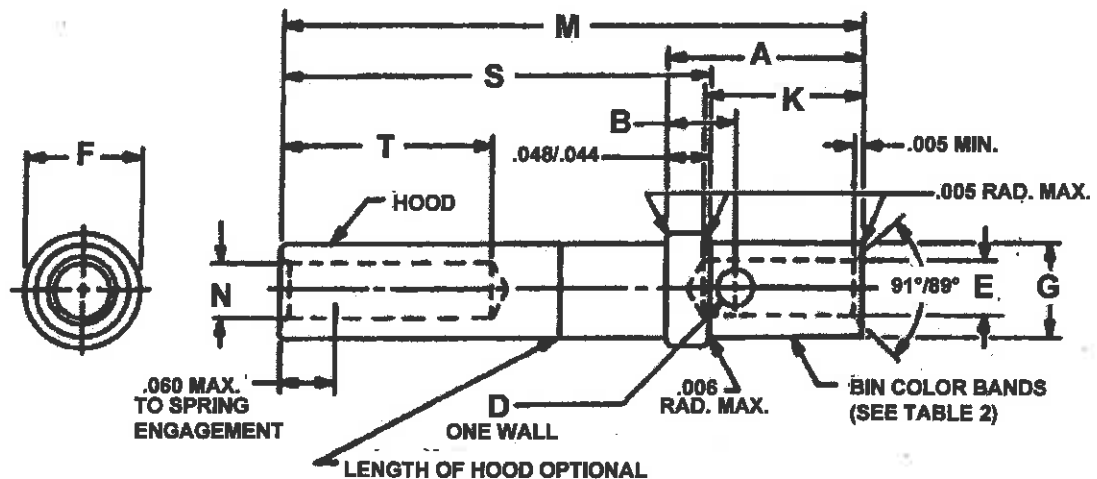
FEDERAL SUPPLY CLASS
5999

RATIONALE

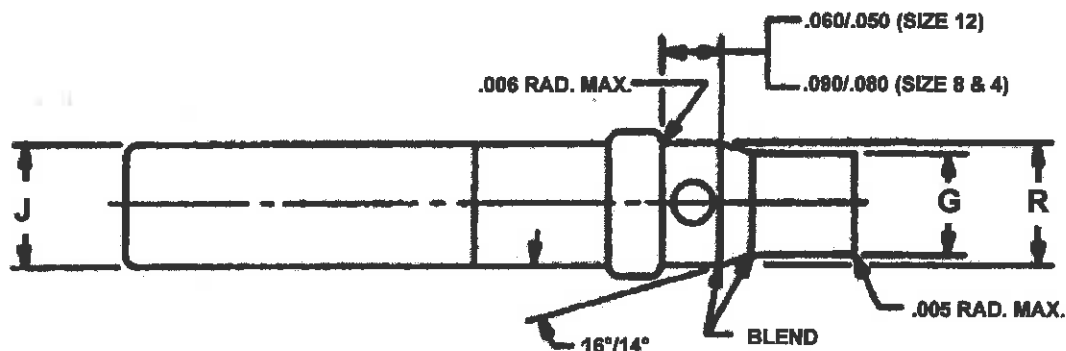
REVISE TO IMPROVE DRAWING/DIMENSION QUALITY, UPDATE REFERENCES, ALIGN SPECIFICATION WITH SAE GUIDELINES, AND REVIEW SPECIFICATION FOR KNOWN TECHNICAL PROBLEMS.

NOTICE

THE REQUIREMENTS FOR PROCURING THE PRODUCT DESCRIBED HEREIN SHALL CONSIST OF THIS SPECIFICATION SHEET AND THE LATEST ISSUE OF SAE AS39029.



FOR CONTACT SOCKET SIZES 16, 16S, 0 AND ALL WIRE BARREL SIZES

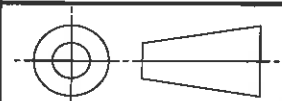


FOR CONTACT SOCKET SIZES 12, 8, AND 4

FIGURE 1 - AS39029/30 SOCKET CONTACT

SAE values your input. To provide feedback on this Technical Report, please visit <http://www.sae.org/technical/standards/AS39029/30E>

THIRD ANGLE PROJECTION



CUSTODIAN: AE-8/AE-8C1

PROCUREMENT SPECIFICATION: AS39029

SAE Aerospace
An SAE International Group

AEROSPACE STANDARD
(R) CONTACTS, ELECTRICAL CONNECTOR, SOCKET, CRIMP REMOVABLE (FOR AS50151 AS345XX SERIES AND MIL-DTL-83723 SERIES II CONNECTORS)

SAE AS39029/30
SHEET 1 OF 4

REV. B

Copyright 2012 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

Copyright SAE International
Provided by IHS under license with SAE
No reproduction or networking permitted without license from IHS

TO PLACE A DOCUMENT ORDER:

Tel: 877-606-7323 (inside USA and Canada)
Fax: 724-776-0790

Licensee=NASA Technical Standards 4/8972545004, User=Hosterman, Kenneth
Not for Resale, 05/21/2013 08:46:24 MDT icb@saesae.org

SAE WEB ADDRESS: <http://www.sae.org>

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be reaffirmed, revised, or cancelled. SAE invites your written comments and suggestions.

REVISED 2012-07

ISSUED 2001-03

INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM
.005	0.127	.044	1.12	.050	1.27	.080	2.03
.006	0.152	.048	1.22	.060	1.52	.090	2.29

FIGURE 1 - AS39029/30 SOCKET CONTACT (CONTINUED - METRIC EQUIVALENTS)

TABLE 1 - CONTACT DIMENSIONS

BIN CODE	A	B	D DIA.	E DIA.	F DIA.	G DIA.	J MAX. DIA.	K MIN.	M (REF)	N DIA.	R	S	T MIN.
217				.068 (1.73)	.133 (3.38)	.103 (2.62)	.113 (3.38)		.911 (23.14)	.064 (1.63) 1/	N/A	.666 (16.92) .656 (16.66)	.399 (10.13)
218	.300 (7.62) .290 (7.37)	.079 (2.01) .073 (1.85)	.042 (1.07) .036 (.914)	.066 (1.68)	.130 (3.30)	.101 (2.57)		.250 (6.35)		1/	N/A	.856 (21.74) .846 (21.49)	.430 (10.92)
219				.102 (2.59) .098 (2.49)	.189 (4.80) .186 (4.72)	.150 (3.81) .147 (3.73)	.161 (4.09)		1.101 (27.97)	.0955 (2.43) 1/	.160 (4.06) .155 (3.94)		
220	.552 (14.02) .542 (13.77)	.094 (2.39) .084 (2.13)		.183 (4.65) .179 (4.55)	.306 (7.77) .303 (7.70)	.265 (6.73) .262 (6.65)	.257 (6.63)			.157 (3.99) .145 (3.68)	.277 (7.04) .272 (6.91)		
221			.072 (1.83) .068 (1.73)	.283 (7.19) .279 (7.09)	.417 (10.59) .414 (10.52)	.376 (9.55) .373 (9.47)	.336 (8.53)	.485 (12.32)	1.342 (34.09)	.240 (6.07) .228 (5.79)	.389 (9.88) .384 (9.75)	.849 (21.56) .833 (21.16)	.587 (14.91)
222	.678 (17.22) .668 (16.97)	.124 (3.15) .084 (2.13)		.455 (11.56) .451 (11.46)	.615 (15.62) .611 (15.52)	.564 (14.33) .561 (14.25)	.518 (13.16)	.580 (14.73)	1.466 (37.24)	.372 (9.45) .360 (9.14)	N/A		

1/ MINIMUM DIAMETER ONLY.

TABLE 2 - MARKING AND DESIGN CHARACTERISTICS

BIN CODES	COLOR BANDS			MATING END SIZE	WIRE BARREL SIZE	TYPE	CLASS
	1ST	2ND	3RD				
217	RED	BROWN	VIOLET	16S	16	A	B
218	RED	BROWN	GRAY	16	16	A	B
219	RED	BROWN	WHITE	12	12	A	B
220	RED	RED	BLACK	8	8	A	B
221	RED	RED	BROWN	4	4	A	B
222	RED	RED	RED	0	0	A	B

TABLE 3 - TOOL REQUIREMENTS

BIN CODE	BASIC CRIMPING TOOL	DIE SET	LOCATOR	POSITIONER	INSTALLING TOOL	REMOVAL TOOL
217	M22520/1-01	N/A	N/A	M22520/1-02 BLUE	M81969/14-03	M81969/14-03
	M22520/7-01	N/A	N/A	M22520/7-03		
218	M22520/1-01	N/A	N/A	M22520/1-02 BLUE		
	M22520/7-01	N/A	N/A	M22520/7-03		
219	M22750/1-01	N/A	N/A	M22520/1-02 YELLOW	M81969/14-04	M81969/14-04
220	M22520/23-01	M22520/23-02	M22520/23-09	N/A	N/A	M81969/29-02
221	M22520/23-01	M22520/23-04	M22520/23-11	N/A	N/A	M81969/29-03
222	M22520/23-01	M22520/23-05	M22520/23-13	N/A	N/A	M81969/29-04

	AEROSPACE STANDARD	SAE AS39029/30 SHEET 2 OF 4	REV. B
	(R) CONTACTS, ELECTRICAL CONNECTOR, SOCKET, CRIMP REMOVABLE (FOR AS50151 AS345XX SERIES AND MIL-DTL-83723 SERIES II CONNECTORS)		

TABLE 4 - PART NUMBERS

AS39029 PART NUMBER	BIN CODE	SUPERSEDED PART NUMBER(S)
M39029/30-217	217	M39029/30-16S-16
M39029/30-218	218	M39029/30-16-16
M39029/30-219	219	M39029/30-12-12
M39029/30-220	220	M39029/30-8-8
M39029/30-221	221	M39029/30-4-4
M39029/30-222	222	M39029/30-0-0

REQUIREMENTS: ALL REQUIREMENTS SHALL CONSIST OF THIS SPECIFICATION AND THE LATEST ISSUE OF AS39029.

1. DESIGN:

CONTACT SHALL BE DESIGNED IN ACCORDANCE WITH FIGURE 1, TABLES 1 AND 2. DIMENSIONS ARE IN INCHES AND SHOWN AFTER PLATING. UNLESS OTHERWISE SPECIFIED, SPHERICAL END DIMENSIONS SHALL CONFORM TO AS39029. METRIC EQUIVALENTS AND GIVEN FOR GENERAL INFORMATION ONLY AND ARE BASED ON 1 INCH = 25.4 MM. E AND N DIAMETER BORES SHALL NOT BREAK THROUGH. THE MECHANICAL PRESSURE MEMBER SHALL BE SHROUDED. THE GAP BETWEEN THE HOOD, IF USED, AND BODY OF THE CONTACT SHALL NOT EXCEED .010 INCHES.

2. TOOLS:

TOOLS REQUIRED FOR CRIMPING CONTACTS TO WIRE/CABLE AND THE INSTALLING/REMOVAL FROM THE CONNECTOR SHALL BE IN ACCORDANCE WITH TABLE 3.

3. PART NUMBERS:

CONTACT PART NUMBERS SHALL BE IN ACCORDANCE WITH TABLE 4. SUPERSEDED PART NUMBERS ARE AS SPECIFIED.

4. MATERIALS:

MATERIALS SHALL BE IN ACCORDANCE WITH AS39029.

5. MECHANICAL:

MECHANICAL PROPERTIES SHALL BE IN ACCORDANCE WITH AS39029.

6. ELECTRICAL:

ELECTRICAL PROPERTIES SHALL BE IN ACCORDANCE WITH AS39029.

7. ENVIRONMENTAL:

ENVIRONMENTAL PROPERTIES SHALL BE IN ACCORDANCE WITH AS39029

SHOCK TEST SHALL BE PERFORMED AT TEST CONDITION A.

APPLICATION NOTES:

- CONTACT MATES DIRECTLY WITH AN AS39029/29 PIN AS SHOWN IN TABLE 5.
- BIN CODE 220, 221, AND 222 ARE NOT RECOMMENDED FOR NAVY SHIPBOARD APPLICATION.

 An SAE International Group	AEROSPACE STANDARD	 AS39029/30 SHEET 3 OF 4	REV. B
	(R) CONTACTS, ELECTRICAL CONNECTOR, SOCKET, CRIMP REMOVABLE (FOR AS50151 AS345XX SERIES AND MIL-DTL-83723 SERIES II CONNECTORS)		

TABLE 5 - CONTACT MATING PART NUMBERS

MATING AS39029/30 BIN CODE	AS39029/29 BIN CODE
217	212
218	212
219	213
220	214
221	215
222	216

SPECIFICATION NOTES:

A CHANGE BAR (I) LOCATED IN THE LEFT MARGIN IS FOR THE CONVENIENCE OF THE USER IN LOCATING AREAS WHERE TECHNICAL REVISIONS, NOT EDITORIAL CHANGES, HAVE BEEN MADE TO THE PREVIOUS ISSUE OF THIS DOCUMENT. AN (R) SYMBOL TO THE LEFT OF THE DOCUMENT TITLE INDICATES A COMPLETE REVISION OF THE DOCUMENT, INCLUDING TECHNICAL REVISIONS. CHANGE BARS AND (R) ARE NOT USED IN ORIGINAL PUBLICATIONS, NOR IN DOCUMENTS THAT CONTAIN EDITORIAL CHANGES ONLY.

 <small>An SAE International Group</small>	AEROSPACE STANDARD	SAE AS39029/30 SHEET 4 OF 4	REV. B
	(R) CONTACTS, ELECTRICAL CONNECTOR, SOCKET, CRIMP REMOVABLE (FOR AS50151 AS345XX SERIES AND MIL-DTL-83723 SERIES II CONNECTORS)		

TABLE 1 - CONTACT BUSHING DIMENSIONS

DASH NUMBER	CONTACT WIRE BARREL SIZE (REF)	WIRE SIZE (REF)	A +.002 (0.05) -.003 (0.08) DIA	B +.002 (0.05) -.003 (0.08) DIA	C +.017 (0.43) -.016 (0.41) DIA	D +.016 (0.41) DIA	F +.006 (0.15) -.005 (0.13) DIA
-8 -10	8	10	.146 (3.71)	.173 (4.39)	.380 (9.65)	.250 (6.35)	.188 (4.78)
-6 -10L	6	10	.136 (3.45)	.225 (5.72)	.700 (17.78)	.297 (7.54)	.188 (4.78)
-6 -9L	6	9	.155 (3.94)	.225 (5.72)	.700 (17.78)	.297 (7.54)	.219 (5.56)
-6 -8L	6	8	.185 (4.70)	.225 (5.72)	.700 (17.78)	.297 (7.54)	.250 (6.35)
-4 -8L	4	8	.185 (4.70)	.272 (6.91)	.700 (17.78)	.344 (8.74)	.250 (6.35)
-4 -6	4	6	.235 (5.97)	.272 (6.91)	.380 (9.65)	.344 (8.74)	.292 (7.42)
-4 -6L	4	6	.225 (5.72)	.272 (6.91)	.700 (17.78)	.344 (8.74)	.292 (7.42)
-4 -5L	4	5	.250 (6.35)	.272 (6.91)	.700 (17.78)	.344 (8.74)	.292 (7.42)
-1 -6L	1	6	.225 (5.72)	.396 (10.06)	.700 (17.78)	.516 (13.11)	.422 (10.72)
-1 -2L	1	2	.359 (9.12)	.396 (10.06)	.700 (17.78)	.516 (13.11)	.422 (10.72)
-0 -2	1/0	2	.369 (9.37)	.444 (11.28)	.536 (13.61)	.516 (13.11)	.462 (11.73)
-4/0 -2/0L	4/0	2/0	.500 (12.70)	.629 (15.98)	.700 (17.78)	.719 (18.26)	.562 (14.27)

TABLE 2 - ALTERNATE CONTACT BUSHING DESIGN DIMENSIONS

DASH NUMBER	CONTACT WIRE BARREL SIZE (REF)	WIRE SIZE (REF)	A +.002 (0.05) -.003 (0.08) DIA	B +.002 (0.05) -.003 (0.08) DIA	C +.010 (0.25)	D +.016 (0.41)	G DIA MIN
-8 -10	8	10	.146 (3.71)	.173 (4.39)	.380 (9.65)	.250 (6.35)	.136 (3.45)
-6 -10L	6	10	.136 (3.45)	.225 (5.72)	.700 (17.78)	.297 (7.54)	.136 (3.45)
-6 -9L	6	9	.155 (3.94)	.225 (5.71)	.700 (17.78)	.297 (7.54)	.155 (3.94)
-6 -8L	6	8	.185 (4.70)	.225 (5.71)	.700 (17.78)	.297 (7.54)	.185 (4.70)
-4 -8L	4	8	.185 (4.70)	.272 (6.91)	.700 (17.78)	.344 (8.74)	.185 (4.70)
-4 -6	4	6	.235 (5.97)	.272 (6.91)	.380 (9.65)	.344 (8.74)	.225 (5.71)
-4 -6L	4	6	.225 (5.72)	.272 (6.91)	.700 (17.78)	.344 (8.74)	.225 (6.35)
-4 -5L	4	5	.250 (6.35)	.272 (6.91)	.700 (17.78)	.344 (8.74)	.250 (6.30)
-1 -6L	1	6	.225 (5.72)	.396 (10.06)	.700 (17.78)	.516 (13.11)	.225 (6.35)
-1 -2L	1	2	.359 (9.12)	.396 (10.06)	.700 (17.78)	.516 (13.11)	.359 (9.12)
-0 -2	1/0	2	.369 (9.37)	.444 (11.28)	.536 (13.61)	.516 (13.11)	.359 (9.12)
-4/0 -2/0L	4/0	2/0	.500 (12.70)	.629 (15.98)	.700 (17.78)	.719 (18.26)	.500 (12.70)

REQUIREMENTS: ALL REQUIREMENTS SHALL CONSIST OF THIS DOCUMENT AND THE LATEST ISSUE OF AS39029.

1. DESIGN: CONTACTS SHALL BE DESIGNED IN ACCORDANCE WITH FIGURE 1 AND TABLES 1 AND 2. DIMENSIONS ARE IN INCHES. METRIC EQUIVALENTS ARE IN PARENTHESES, ARE GIVEN FOR GENERAL INFORMATION ONLY, AND BASED UPON 1.00 INCH = 25.4 MM. DIMENSIONS SHOWN APPLY AFTER PLATING. DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ANSI Y14.5.
2. MATERIAL: COPPER ALLOY: ANNEAL TO ROCKWELL HARDNESS 15T 70 MAXIMUM IN ACCORDANCE WITH ASTM E18, EXCEPT THAT -1-6L SHALL BE ANNEALED TO ROCKWELL HARDNESS 15T 55 MAXIMUM IN ACCORDANCE WITH ASTM E18.
3. FINISH: BUSHINGS SHALL BE SILVER PLATED TO A MINIMUM THICKNESS OF .0002 INCH (0.005 MM) IN ACCORDANCE WITH ASTM B700 OR AMS-QQ-S-365 (AS AVAILABLE) OVER ELECTROLYTIC NICKEL UNDERPLATE OF 30 TO 150 (0.00076 TO 0.0038) MICROINCHES THICK PER AMS-QQ-N-290 OR OVER COPPER PLATE IN ACCORDANCE WITH AMS2418, .000050 INCH (0.00127 MM) THICK MINIMUM.
4. SURFACE TEXTURE: ALL EXTERNAL SURFACES SHALL BE 63 OR BETTER IN ACCORDANCE WITH ASME B46.1.
5. CONTACT BUSHINGS SHALL BE FREE OF ALL BURRS. BREAK ALL SHARP EDGES .005R MAXIMUM.
6. PART NUMBER CROSS REFERENCE: SEE TABLE 3.

TABLE 3 - PART NUMBER CROSS REFERENCE

DETAIL SHEET/DASH NUMBER (RECOMMENDED FOR NEW DESIGN)	REPLACEMENT APPLICATION PART NUMBER
AS39029/112-8-10	MS3348-8-10
AS39029/112-4-6	MS3348-4-6
AS39029/112-0-2	MS3348-0-2
AS39029/112-1-2L	MS3348-1-2L
AS39029/112-4-5L	MS3348-4-5L
AS39029/112-4-6L	MS3348-4-6L
AS39029/112-6-8L	MS3348-6-8L
AS39029/112-6-9L	MS3348-6-9L
AS39029/112-1-6L	MS3348-1-6L
AS39029/112-4/0-2/0L	MS3348-4/0-2/0L
AS39029/112-4-8L	MS3348-4-8L
AS39029/112-6-10L	MS3348-6-10L

7. QUALIFICATION REQUIREMENTS: QUALIFICATION SHALL BE BY CERTIFICATION IN ACCORDANCE WITH AS39029 AND HEREIN. CONTACT-SLEEVE COMBINATIONS SHALL MEET THE FOLLOWING REQUIREMENTS.
 - a. MATERIAL AND FINISH CERTIFICATIONS (SLEEVE ONLY)
 - b. EXAMINATION OF PRODUCT (SLEEVE ONLY)
 - c. AXIAL CONCENTRICITY-WIRED
 - d. CRIMP TENSILE STRENGTH
 - e. CONTACT RESISTANCE
 - f. CRIMP TOOL: IN ACCORDANCE WITH THE APPLICABLE CONTACT DETAIL SPECIFICATION FOR SIZES 8 TO 4/0 (SEE 8a).
 - g. PART NUMBER: THE AS39029/112 PART NUMBER IS RECOMMENDED FOR NEW DESIGN AND THE MS3348 PART NUMBER IS RECOMMENDED FOR REPLACEMENT APPLICATIONS ONLY. SEE TABLE 3 FOR PART NUMBER CROSS REFERENCE.

REPLACEMENT PART NUMBER:

MS3348 -8 -10L

BASIC PART NUMBER _____

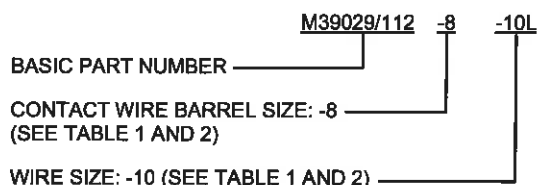
CONTACT WIRE BARREL SIZE: -8 _____
(SEE TABLE 1 AND 2)

WIRE SIZE: -10 (SEE TABLE 1 AND 2) _____

LETTER DESIGNATOR L MEANS APPLICABLE ONLY TO AS39029/48 AND /49 CONTACTS (SEE 8e)

 <i>An SAE International Group</i>	AEROSPACE STANDARD	SAE AS39029/112 SHEET 3 OF 4	REV. C
	(R) CONTACT BUSHING, ELECTRICAL CONNECTOR CONTACT, WIRE BARREL		

NEW DESIGN PART NUMBER:



LETTER DESIGNATOR L MEANS APPLICABLE ONLY TO AS39029/48 AND /49 CONTACTS (SEE 8e)

IMPRESSION STAMP MARKING IS NOT PERMITTED. UNLESS OTHERWISE SPECIFIED, PART NUMBER SHALL BE PUT ON THE BUSHING AT AN OPTIONAL LOCATION OR PART(S) WITH THE SAME PART NUMBER SHALL BE BULK PACKAGED SEPARATELY WITH THE PART NUMBER AND QUANTITY ON THE PACKAGE

8. APPLICATIONS:

- THESE ADAPTORS ARE INTENDED FOR USE WITH TYPE A, CLASS A AND B CRIMP CONTACTS PER AS39029 WITH SEAMLESS CRIMP BARRELS. THE CONTACT-SLEEVE COMBINATION MUST BE USED AS A CLASS B APPLICATION ONLY (SEE AS39029).
- EACH ADAPTER IS INTENDED FOR USE WITH A SINGLE CONDUCTOR, MULTI-STRANDED CONSTRUCTION, COPPER WIRE WITH SILVER, TIN, OR NICKEL PLATING (MIL-DTL-29606 CONDUCTOR PREFERRED).
- CONDUCTORS WITH ALTERNATE MATERIALS, FINISHES, AND SOLID CONDUCTORS ARE NOT RECOMMENDED.
- CONTACT BUSHINGS -8 -10, -4 -6, AND -1/0 -2 ARE FOR USE WITH WIRE BARRELS CONFORMING TO MS3190, TYPES B AND C.
- CONTACT BUSHING " - () - () L " IS FOR USE WITH AS39029/48 AND /49 CONTACTS.
- THE USER IS RESPONSIBLE FOR INSURING APPROPRIATE CURRENT DE-RATING (SEE AS50881).
- THE USER IS RESPONSIBLE FOR INSURING WIRE INSULATION DIAMETER TO WIRE SEALING GROMMET CAPABILITY, IF USING CONNECTORS WITH ENVIRONMENTAL SEALING WIRE GROMMETS.

9. SUPERSEDING SPECIFICATIONS:

AS39029/112 SUPERSEDES MS3348 AND AS33481, HOWEVER THE BASIC PART NUMBER FOR PROCUREMENT PURPOSES REMAINS MS3348 AS LISTED IN TABLE 3.

- A CHANGE BAR (I) LOCATED IN THE LEFT MARGIN IS FOR THE CONVENIENCE OF THE USER IN LOCATING AREAS WHERE TECHNICAL REVISIONS, NOT EDITORIAL CHANGES, HAVE BEEN MADE TO THE PREVIOUS ISSUE OF THIS DOCUMENT. AN (R) SYMBOL TO THE LEFT OF THE DOCUMENT TITLE INDICATES A COMPLETE REVISION OF THE DOCUMENT, INCLUDING TECHNICAL REVISIONS. CHANGE BARS AND (R) ARE NOT USED IN ORIGINAL PUBLICATIONS, NOR IN DOCUMENTS THAT CONTAIN EDITORIAL CHANGES ONLY.

SAE Aerospace <small>An SAE International Group</small>	AEROSPACE STANDARD (R) CONTACT BUSHING, ELECTRICAL CONNECTOR CONTACT, WIRE BARREL	SAE AS39029/112 SHEET 4 OF 4	REV. C
---	---	--	-------------------------

Wire, Electrical, Polyvinyl Chloride Insulated,
PVC-Glass-Nylon, Tin-Coated Copper Conductor, 600-Volt, 105°C

FSC 6145

NOTICE

This document has been taken directly from U.S. Military Specification MIL-W-5086/2C, Amendment 1 and contains only minor editorial and format changes required to bring it into conformance with the publishing requirements of SAE technical standards. The initial release of this document is intended to replace MIL-W-5086/2C, Amendment 1. Any part numbers established by the original specification remain unchanged.

The original Military Specification was adopted as an SAE standard under the provisions of the SAE Technical Standards Board (TSB) Rules and Regulations (TSB 001) pertaining to accelerated adoption of government specifications and standards. TSB rules provide for (a) the publication of portions of unrevised government specifications and standards without consensus voting at the SAE Committee level, and (b) the use of the existing government specification or standard format.

Under Department of Defense policies and procedures, any qualification requirements and associated qualified products lists are mandatory for DOD contracts. Any requirement relating to qualified products lists (QPL's) has not been adopted by SAE and is not part of this technical report.

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be reaffirmed, revised, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2007 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

TO PLACE A DOCUMENT ORDER: Tel: 877-606-7323 (Inside USA and Canada)
Tel: 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
<http://www.sae.org>

SAE AS50861/2

The complete requirements for acquiring the wire described herein shall consist of this document and the latest issue of Specification MIL-W-5086.

From date of issue of this revision, wire of this specification sheet shall not be used in aerospace applications. See "Non-Use" note on page 5.

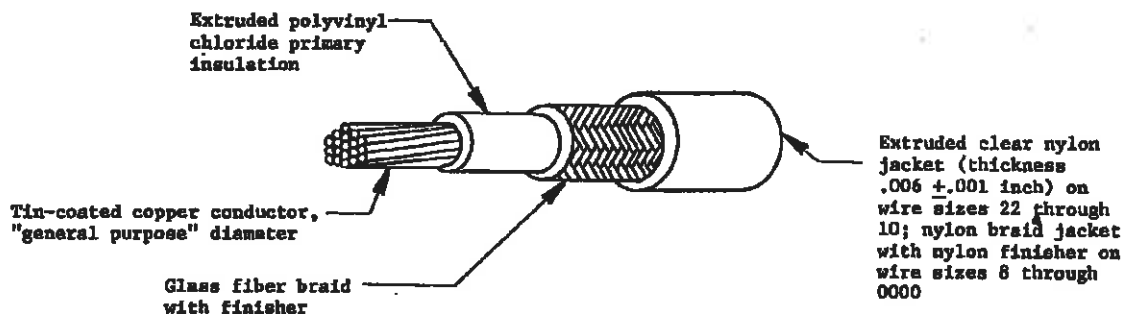


TABLE I. Construction details.

Part no. ^{1/}	Wire size	Stranding (Number of strands X AWG gage of strands)	Diameter of stranded conductor (inches)		Finished wire		
			(min)	(max)	Resistance at 20°C (68°F) (ohms/1000 ft) (max)	Diameter (inches)	Weight (lbs/1000 ft) (max)
M5086/2-22-*	22	19 x 34	.029	.033	16.2	.075 ±.005	4.70
M5086/2-20-*	20	19 x 32	.037	.041	9.88	.085 ±.005	6.80
M5086/2-18-*	18	19 x 30	.046	.051	6.23	.095 ±.005	9.50
M5086/2-16-*	16	19 x 29	.052	.058	4.81	.105 ±.005	11.90
M5086/2-14-*	14	19 x 27	.065	.073	3.06	.125 ±.007	18.30
M5086/2-12-*	12	37 x 28	.084	.090	2.02	.143 ±.007	26.0
M5086/2-10-*	10	37 x 26	.106	.114	1.26	.189 ±.007	44.0
M5086/2-8-*	8	133 x 29	.158	.173	.701	.240 ±.007	70.0
M5086/2-6-*	6	133 x 27	.198	.217	.445	.293 ±.007	110.0
M5086/2-4-*	4	133 x 25	.250	.274	.280	.355 ±.010	165.0
M5086/2-2-*	2	665 x 30	.320	.340	.183	.425 ±.010	250.0
M5086/2-1-*	1	817 x 30	.360	.380	.149	.470 ±.010	305.0
M5086/2-01-*	0	1045 x 30	.395	.425	.116	.525 ±.015	400.0
M5086/2-02-*	00	1330 x 30	.440	.475	.091	.590 ±.015	500.0
M5086/2-03-*	000	1665 x 30	.500	.540	.071	.650 ±.015	620.0
M5086/2-04-*	0000	2109 x 30	.565	.605	.056	.720 ±.015	785.0

^{1/} Part no.: The asterisks in the part number column, Tables I through III, shall be replaced by color code designators in accordance with MIL-STD-681. Examples: Size 20, white - M5086/2-20-9; white with orange stripe - M5086/2-20-93.

SAE AS50861/2

TABLE II. Bend test mandrels and test loads.

Part no.	Mandrel diameter (inches) ($\pm 3\%$)			Test load (lbs) ($\pm 3\%$)	
	Life cycle (oven and bend tests) <u>1/</u>	Cold bend test	Wrap test	Life cycle (oven and bend tests) <u>1/</u>	Cold bend test
M5086/2-22-*	4.5	3.0	0.45	.75	2.0
M5086/2-20-*	4.5	3.0	.51	.75	2.0
M5086/2-18-*	4.5	3.0	.57	1.0	2.0
M5086/2-16-*	6.5	3.0	.63	1.0	3.0
M5086/2-14-*	6.5	6.0	.75	1.0	3.0
M5086/2-12-*	6.5	6.0	.86	3.0	3.0
M5086/2-10-*	10.0	6.0	1.13	3.0	5.0
M5086/2-8-*	10.0	6.0	---	3.0	5.0
M5086/2-6-*	10.0	10.0	---	6.0	10.0
M5086/2-4-*	10.0	10.0	---	6.0	10.0
M5086/2-2-*	10.0	18.0	---	6.0	15.0
M5086/2-1-*	10.0	18.0	---	6.0	15.0
M5086/2-01-*	10.0	18.0	---	10.0	20.0
M5086/2-02-*	10.0	18.0	---	10.0	25.0
M5086/2-03-*	10.0	18.0	---	10.0	30.0
M5086/2-04-*	10.0	18.0	---	10.0	30.0

1/ Also for bend tests after immersion.

WIRE RATINGS AND ADDITIONAL REQUIREMENTS

Temperature rating: 105°C (221°F) max conductor temperature

Voltage rating: 600 volts (rms) at sea level

Blocking: 105° $\pm 2^\circ$ C (221° $\pm 3.6^\circ$ F)

Color: In accordance with MIL-STD-104, Class 1; white preferred

Color striping or banding durability:

Sizes 22 through 10: 250 cycles (500 strokes) (min), 500 grams weight

Sizes 8 through 0000: 50 cycles (100 strokes) (min), 250 grams weight

Flammability (Method 1):

30 sec (max) after-flame

1.50 inches (max) flame travel, either direction on wire

No flaming of tissue paper

Humidity resistance:

Sizes 22 through 10: 40 megohms for 1000 ft, min insulation resistance after humidity exposure

Sizes 8 through 0000: Not applicable

Identification durability:

Sizes 22 through 10: 125 cycles (250 strokes) (min), 500 grams weight

Sizes 8 through 0000: 50 cycles (100 strokes) (min), 250 grams weight

Impulse dielectric test:

Primary insulation (when test is used in lieu of spark test): 6.0 kilovolts (peak), 100% test

Finished wire: 8.0 kilovolts (peak), 100% test

Insulation resistance:

Sizes 22 through 10: 40 megohms for 1000 ft (min)

Sizes 8 through 0000: Not applicable

SAE AS50861/2

Life cycle: Oven temperature, $120^{\circ} \pm 2^{\circ}\text{C}$ ($248^{\circ} \pm 3.6^{\circ}\text{F}$)

Low temperature (cold bend): $-55^{\circ} \pm 2^{\circ}\text{C}$ ($-67^{\circ} \pm 3.6^{\circ}\text{F}$)

Shrinkage: 0.125 inch max at $150^{\circ} \pm 2^{\circ}\text{C}$ ($302^{\circ} \pm 3.6^{\circ}\text{F}$)

Smoke: 110°C (230°F)

Spark test of primary insulation:

Sizes 22 through 10: 3000 volts (rms), 60 Hz, 100% test

Sizes 8 through 0000: 4000 volts (rms), 60 Hz, 100% test

Surface resistance:

Sizes 22 through 10: 5 megohm-inches (min), initial and final readings

Sizes 8 through 0000: Not applicable

Thermal shock:

Oven temperature, $105^{\circ} \pm 2^{\circ}\text{C}$ ($221^{\circ} \pm 3.6^{\circ}\text{F}$)

The maximum shrinkage permitted for PVC insulation is .060 inch. Sizes 8 through 0000 gauge wire is permitted to have the braided polyamide outer jacket and glass braid insulation layers shrink .125 inch maximum.

Wet dielectric test: 2000 volts (rms)

Wrap test oven temperature:

Sizes 22 through 10: $95^{\circ} \pm 2^{\circ}\text{C}$ ($203^{\circ} \pm 3.6^{\circ}\text{F}$)

Sizes 8 through 0000: Not applicable

Wrap test specimens: In the selection of MIL-W-5086/2 wire specimens for the wrap test, each sample length from which a specimen is to be taken shall first be subjected to the dye inspection described under the wrap test procedure of MIL-W-5086, in order to detect glass fiber protrusions, if present, which permit dye penetration into the underlying braid. Specimens for the wrap test shall be cut only from those portions of each sample length which are free of such glass fiber protrusions.

Metric conversion note: Data in this specification sheet may be converted to metric as follows:

Linear dimensions	25.40 x inches = millimeters (mm)
Weight (general)	.4536 x lbs = kilograms (kg)
Wire weight	1.488 x (lbs/1000 ft) = kg/km
Conductor resistance	3.281 x (ohms/1000 ft) = ohms/km
Insulation resistance	.3048 x (megohms for 1000 ft) = megohms for 1 km
Surface resistance	Where the electrode spacing is 25.0 millimeters in the metric document, the MIL-W-5086 megohm-inches resistance (defined as total megohms resistance times inches wire diameter) may be converted as follows: 25.0 x (megohm-inches diameter) = megohm-mm diameter 78.5 x (megohm-inches diameter) = megohm-mm circumference 3.14 x (megohm-inches diameter) = megohm-mm circumference per mm of electrode spacing

SUPERSESSION DATA: The wire of this specification sheet replaces and supersedes Type II wire of MIL-W-5086A (superseded 19 March 1968) and MS25190 (canceled 29 May 1969). Supersession by part number is in accordance with Table III.

SAE AS50861/2

TABLE III. Supersession by part number.

Size designation, MIL-W-5086A Type II	Part number, MS25190 Type II	Part number, MIL-W-5086/2
AN-22	MS25190-B-22	M5086/2-22-*
AN-20	MS25190-B-20	M5086/2-20-*
AN-18	MS25190-B-18	M5086/2-18-*
AN-16	MS25190-B-16	M5086/2-16-*
AN-14	MS25190-B-14	M5086/2-14-*
AN-12	MS25190-B-12	M5086/2-12-*
AN-10	MS25190-B-10	M5086/2-10-*
AN-8	MS25190-B-8	M5086/2-8-*
AN-6	MS25190-B-6	M5086/2-6-*
AN-4	MS25190-B-4	M5086/2-4-*
AN-2	MS25190-B-2	M5086/2-2-*
AN-1	MS25190-B-1	M5086/2-1-*
AN-0	MS25190-B-01	M5086/2-01-*
AN-00	MS25190-B-02	M5086/2-02-*
AN-000	MS25190-B-03	M5086/2-03-*
AN-0000	MS25190-B-04	M5086/2-04-*

NON-USE AND REPLACEMENT OF MIL-W-5086/2 WIRE IN AEROSPACE APPLICATIONS: Cable or wire with polyvinyl chloride insulation shall not be used in aerospace applications.

Replacement wires for the MIL-W-5086/2 items for aerospace applications should be selected from the lists of approved wires in the latest issue of MIL-W-5088, Wiring, Aerospace Vehicle, with due regard to the weight, dimensional, and functional requirements of the specific project or application.

INTERNATIONAL STANDARDIZATION: Certain provisions of Table I of this specification sheet are the subject of international standardization agreement (ASCC Air Std 12/5). When amendment, revision, or cancellation of this specification sheet is proposed which will affect or violate the international agreement concerned, the preparing activity will take appropriate reconciliation action through international standardization channels including departmental standardization offices, if required.

PREPARED BY SAE SUBCOMMITTEE AE-8D, WIRE & CABLE

INCH-POUND

MS27488N

22 July 2008

SUPERSEDING

MS27488M

29 September 2000

DETAIL SPECIFICATION SHEET

PLUG, END SEAL, ELECTRICAL CONNECTOR

This specification sheet is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet.

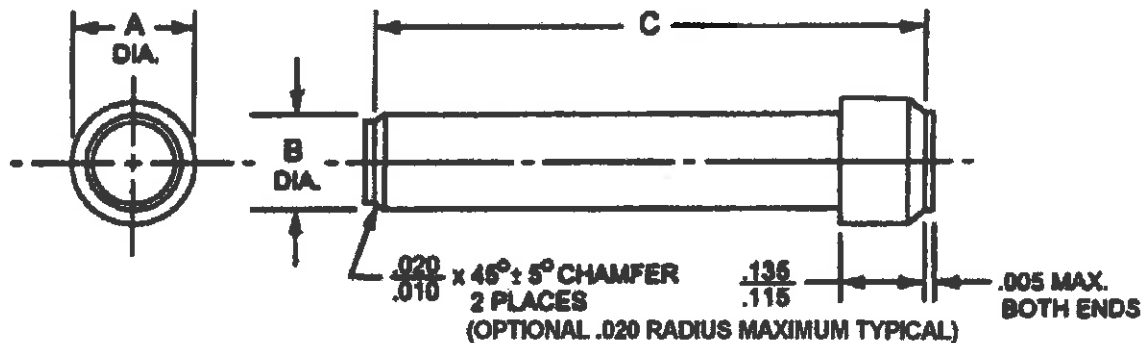


FIGURE 1. Sealing plug configuration.

AMSC N/A

FSC 5935

MS27488N

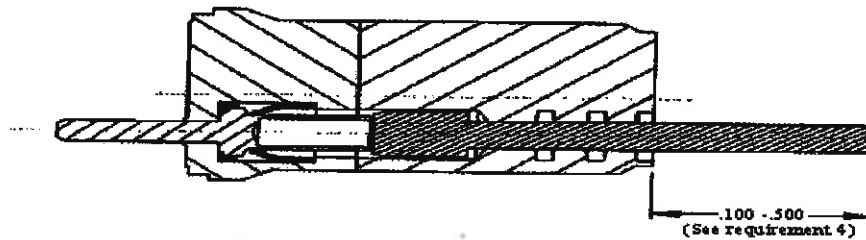


FIGURE 2. Sealing plug with unwired contact.

TABLE I. Sealing plug dimensions and application information.

Dash no.	Color code	A dia. <u>1/</u>	B dia. <u>1/</u>	C dim. <u>1/</u>	Connector contact size
-22-2	Black	0.066 0.058	0.045 0.038	0.500 0.438	23-22 <u>2/</u>
-20-2	Red	0.090 0.080	0.058 0.048	0.805 0.755	20 <u>2/</u>
-16-2	Green	0.130 0.120	0.079 0.069	0.872 0.822	16 <u>2/</u>
-12-2	Orange	0.170 0.160	0.125 0.115	0.841 0.791	12 <u>2/</u>
-16-3	Blue	0.130 0.120	0.079 0.069	1.472 1.422	16 (5015) <u>3/</u>
-12-3	Yellow	0.170 0.160	0.125 0.115	1.441 1.391	12 (5015) <u>3/</u>
-8-3	Red	0.315 0.305	0.175 0.165	1.189 1.139	8 (5015) <u>3/</u>
-4-3	Blue	0.414 0.404	0.283 0.273	1.189 1.139	4 (5015) <u>3/</u>
-0-3	Yellow	0.606 0.596	0.431 0.416	1.071 1.021	0 (5015) <u>3/</u> , <u>4/</u>

NOTES:

1/ Dimensions are in inches.

2/ Sealing plug is for use in all connectors and components listed in table II, with the exception of MIL-DTL-5015 connectors.

3/ Sealing plug is for use in MIL-DTL-5015 connectors. See figure 3.

4/ See figure 3.

MS27488N

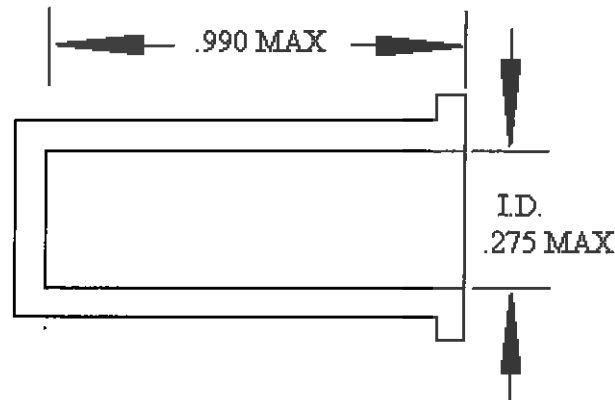


FIGURE 3. Optional design for MS27488-0-3.

TABLE II. Components that use MS27488 sealing plugs.

Document	Component type
MIL-DTL-5015	Electrical connector
MIL-PRF-22885/103	Pushbutton switch
MIL-PRF-22885/108	Pushbutton switch
MIL-S-24317/12	Pushbutton switch
MIL-DTL-26482, Series 1 and 2	Electrical connector
MIL-DTL-26500	Electrical connector
MIL-DTL-26518	Electrical connector
MIL-DTL-28804	Electrical connector
MIL-C-29600	Electrical connector
MIL-DTL-38999	Electrical connector
MIL-C-81511, Series 3 and 4	Electrical connector
MIL-C-81582/2	Electrical connector
SAE-AS81659	Electrical connector
MIL-C-81703	Electrical connector
SAE-AS81714	Terminal Junction System
SAE-AS81714/1	Terminal Junction System
SAE-AS81714/2	Terminal Junction System
SAE-AS81714/3	Terminal Junction System
SAE-AS81714/4	Terminal Junction System
SAE-AS81714/6	Terminal Junction System
SAE-AS81714/7	Terminal Junction System
SAE-AS81714/8	Terminal Junction System

MS27488N

TABLE II. Components that use MS27488 sealing plugs - Continued.

Document	Component type
SAE-AS81714/9	Terminal Junction System
SAE-AS81714/17	Terminal Junction System
SAE-AS81714/25	Terminal Junction System
SAE-AS81714/26	Terminal Junction System
SAE-AS81714/27	Terminal Junction System
SAE-AS81714/28	Terminal Junction System
SAE-AS81714/30	Terminal Junction System
SAE-AS81714/31	Terminal Junction System
SAE-AS81714/60	Terminal Junction System
SAE-AS81714/61	Terminal Junction System
SAE-AS81714/63	Terminal Junction System
MIL-DTL-83527	Electrical connector
MIL-DTL-83538	Electrical connector
MIL-DTL-83723, Series II and III	Electrical connector
MIL-C-83723/66	Electrical connector
MIL-C-83723/67	Electrical connector
MIL-C-83723/68	Electrical connector
MIL-C-83723/69	Electrical connector
MS21346	Toggle switch
MS21347	Toggle switch
MS27722	Toggle switch
MS27723	Toggle switch
MS27724	Toggle switch
MS27781	Toggle switch
MS27782	Toggle switch
MS27783	Toggle switch
MS27784	Toggle switch
MS27785	Toggle switch
MS27786	Toggle switch
MS27787	Toggle switch
MS27788	Toggle switch
MS27789	Toggle switch

MS27488N

TABLE III. Metric equivalents.

Inch	Millimeter	Inch	Millimeter	Inch	Millimeter	Inch	Millimeter
0.010	0.254	0.115	2.921	0.404	10.262	0.872	22.149
0.020	0.508	0.120	3.048	0.414	10.516	0.822	20.879
0.038	0.965	0.125	3.175	0.416	10.566	0.841	21.361
0.045	1.143	0.130	3.302	0.431	10.947	0.990	25.146
0.048	1.219	0.135	3.429	0.438	11.125	1.021	25.933
0.058	1.473	0.160	4.064	0.500	12.700	1.071	27.203
0.066	1.676	0.165	4.191	0.596	15.138	1.139	28.931
0.069	1.753	0.170	4.318	0.606	15.393	1.189	30.200
0.079	2.007	0.175	4.445	0.755	19.177	1.391	35.331
0.080	2.032	0.273	6.934	0.791	20.091	1.422	36.119
0.090	2.286	0.275	6.985	0.796	20.218	1.441	36.601
0.100	2.540	0.283	7.188	0.805	20.447	1.472	37.389

NOTE: Metric equivalents (to the nearest 0.001 mm) are given for general information only and are based upon 1 inch = 25.4 mm.

REQUIREMENTS:

1. **Material.** Plastic rod, molded and extruded - temperature limit 200 °C minimum. The material used to fabricate sealing plugs shall be polytetrafluoroethylene (PTFE) in accordance with ASTM-D1710, or fluorinated ethylene propylene (FEP) in accordance with ASTM-D2116, or perfluoroalkoxy (PFA) in accordance with ASTM-D3307, or polyphenylsulfone (PPSU) in accordance with ASTM-D6394.
2. **Color.** Color of items shall be in accordance with EIA-359.
3. **Resitivity.** Material resitivity shall be not less than 100 megohms when tested in accordance with ASTM-D257.
4. **Installation.** When installing sealing plugs in connector, component or module grommets, the head of the sealing plug shall be inserted first. The sealing plug is designed for use with an unwired contact installed in connector applications. The sealing plug shall be pushed into the grommet until the head is positioned against the end of the unwired contact.
5. **Workmanship.** The item shall be free from flash and burrs. The length of diameter B shall be free of all molding marks, protrusions, and blemishes. Molding marks, protrusions, and blemishes from gate cutoffs are permissible but only on the plug ends or side of the head and shall not be greater than 0.005 inch in height.

MS27488N

6. Part marking. Marking is not required. Items shall be identified at the bag or higher packaging level.
7. Connector, module, and switch manufacturers, their distributors, and agents supplying military connectors, modules, and switches as noted, shall only furnish end seal plugs with the connectors, modules, and switches in accordance with this specification sheet.

NOTES:

1. Dimensioning and tolerancing per ASME Y14.5M.
2. Table IV lists the documents that use MS27488 sealing plugs along with their status and superseding document information.

TABLE IV. Document status and supersession information.

Document	Status	Superseding Document
MIL-DTL-5015	Active	None
MIL-W-5088	Inactive for New Design	SAE-AS50881
MIL-PRF-22885/103	Active	None
MIL-PRF-22885/108	Active	None
MIL-S-24317/12	Inactive for New Design	None
MIL-DTL-26482, Series 1 and 2	Active	None
MIL-DTL-26500	Inactive for New Design	None
MIL-DTL-26518	Inactive for New Design	None
MIL-DTL-28804	Active	None
MIL-C-29600	Active	None
MIL-DTL-38999	Active	None
MIL-C-81511, Series 3 and 4	Inactive for New Design	None
MIL-C-81582/2	Active	None
MIL-C-81659	Canceled	SAE-AS81659
MIL-C-81703	Inactive for New Design	SAE-AS81703
MIL-T-81714	Canceled	SAE-AS81714
MIL-T-81714/1	Canceled	SAE-AS81714/1
MIL-T-81714/2	Canceled	SAE-AS81714/2
MIL-T-81714/3	Canceled	SAE-AS81714/3
MIL-T-81714/4	Canceled	SAE-AS81714/4

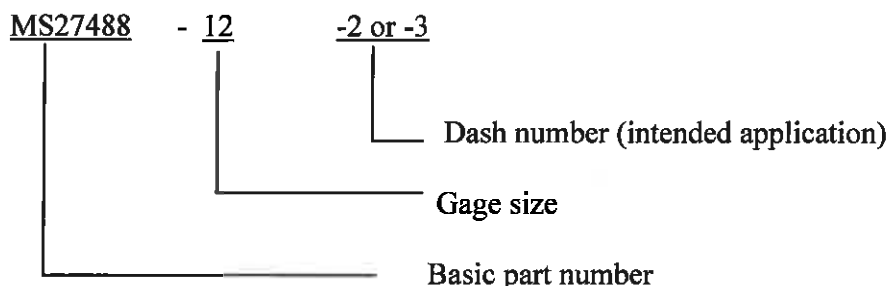
MS27488N

TABLE IV. Document status and supersession information – Continued.

Document	Status	Superseding Document
MIL-T-81714/6	Canceled	SAE-AS81714/6
MIL-T-81714/7	Canceled	SAE-AS81714/7
MIL-T-81714/8	Canceled	SAE-AS81714/8
MIL-T-81714/9	Canceled	SAE-AS81714/9
MIL-T-81714/17	Canceled	SAE-AS81714/17
MIL-T-81714/25	Canceled	SAE-AS81714/25
MIL-T-81714/26	Canceled	SAE-AS81714/26
MIL-T-81714/27	Canceled	SAE-AS81714/27
MIL-T-81714/28	Canceled	SAE-AS81714/28
MIL-T-81714/30	Canceled	SAE-AS81714/30
MIL-T-81714/31	Canceled	SAE-AS81714/31
MIL-T-81714/60	Canceled	SAE-AS81714/60
MIL-T-81714/61	Canceled	SAE-AS81714/61
MIL-T-81714/63	Canceled	SAE-AS81714/63
MIL-DTL-83527	Active	None
MIL-DTL-83538	Active	None
MIL-DTL-83723, Series II and III	Active	None
MIL-C-83723/66	Active	None
MIL-C-83723/67	Active	None
MIL-C-83723/68	Active	None
MIL-C-83723/69	Active	None
MS21346	Active	None
MS21347	Active	None
MS27722	Active	None
MS27723	Active	None
MS27724	Active	None
MS27781	Active	None
MS27782	Active	None
MS27783	Active	None
MS27784	Active	None
MS27785	Active	None
MS27786	Active	None
MS27787	Active	None
MS27788	Active	None
MS27789	Inactive for New Design	None
MIL-STD-1760	Active	None

MS27488N

3. Example of part or identifying number:



4. MS27488 part numbers supersede part numbers from MIL-C-81511/39, MIL-C-83723/28, MS27186, MS27187, and MS27488, revision M as follows:

- a. MS27488-22-2 supersedes MS27488-22-1, M81511/39-22 and MS27488-22.
- b. MS27488-20-2 supersedes MS27488-20-1, M81511/39-20, M83723/28-20, MS27186-1, MS27187-3, and MS27488-20.
- c. MS27488-16-2 supersedes M81511/39-16, M83723/28-16, MS27186-2, MS27187-1, and MS27488-16.
- d. MS27488-16-3 supersedes MS27488-16-1. (MS27488-16-3 is for use in MIL-DTL-5015 electrical connectors only. See information given in table I, MS27488-16-2 for all other applications.)
- e. MS27488-12-2 supersedes M81511/39-12, M83723/28-12, MS27186-3, MS27187-2, and MS27488-12.
- f. MS27488-12-3 supersedes MS27488-12-1. (MS27488-12-3 is for use with MIL-DTL-5015 electrical connectors only. See information given in table I, MS27488-12-2 for all other applications.)
- g. MS27488-8-3 supersedes MS27488-8-1, M83723/28-8, and MS27488-8.
- h. MS27488-4-3 supersedes MS27488-4-1, M83723/28-4, MS27187-4, and MS27488-4.
- i. MS27488-0-3 supersedes MS27488-0-1, M83723/28-0, and MS27488-0.

5. The MS27488 gage size given as part of the part number matches the connector contact size and grommet cavity size for which the corresponding end seal plug is used.

6. For design purposes, this specification sheet takes precedence over acquisition documents referenced herein.

7. Contact installing tools listed in table IV may be used for installing the seal plugs. The use of tools for seal plug sizes 12 and smaller will aid in the installation by supporting the plug during

MS27488N

head first insertion. The tool rides against the shoulder on the back of the plug head during insertion rather than pushing on the tail end of the unsupported plug. The tools will not remove the seal plugs. Plugs must be removed by grasping the tail end of the plug that is left protruding outside the grommet. The tools are not recommended for seal plug sizes 8 and larger.

TABLE V. Installation tools.

Seal plug	Tool part number
MS27488-22-2	M81969/14-01
MS27488-20-2	M81969/14-11
MS27488-16-2	M81969/14-03
MS27488-12-2	M81969/14-04
MS27488-16-3	M81969/14-03
MS27488-12-3	M81969/14-04

8. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

9. Connector, module, and switch manufacturers, their distributors, and agents are permitted to supply MS27488, revision M sealing plugs for 12 months after the date of this revision or exhaust their inventories, whichever comes first.

CONCLUDING MATERIAL

Custodians:

Army - CR
Navy - AS
Air Force - 85

Preparing activity:

Navy - AS

(Project 5935-2006-035)

Review activities:

Army - AR, MI
Navy - EC
Air Force - 19, 99

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <http://assist.daps.dla.mil>.